

**SEABIRD AND MARINE MAMMAL MONITORING
ON OFFSHORE ROCK ISLANDS
IN SONOMA COUNTY, CALIFORNIA**

2013

PROTOCOL DOCUMENTATION

The Stewards of Coast and Redwoods

and

California State Parks, Seabird Protection Network,
Bureau of Land Management, California State Office
California Coastal National Monument,
Madrone Audubon Society

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WELCOME

Thank you for your interest, dedication, and contribution towards the Stewards of the Coast and Redwoods (Stewards) Seabird Monitoring Program. The information you will gather is essential for sustaining these unique marine animals. In addition, your observations and actions are integral towards rebuilding a tenuous relationship between people and their marine habitat.

Literature, art and culture have long reflected the connections that humans have with seabirds. Many of us first heard of the albatross in high school when we read *Rime of the Ancient Mariner* or we became enchanted with gulls through the book *Jonathan Livingston Seagull*. But the human seabird relationship began long before the advent of literature.

Oral traditions tell us of the connection Californian Native Americans had with seabirds. The birds' long migrations and seasonal appearances heralded change and elicited celebration. In southern California, Native American Chumash regalia consisted of skirts made of cormorant skins sewn together. California rock art from thousands of years ago depicts cormorants as a ceremonial creature to be honored.

Historically seabirds served as indicators for peoples living on the coasts. Polynesians depended on these animals to find landmasses as they paddled vast oceans in canoes. Fishermen relied upon marine birds to find fish shoals and underwater banks. Hunters captured seabirds for food or to use as bait, while other hunting cultures used cormorants directly to attain food. The cormorant would be tethered to a long leash and then trained to dive for fish. Upon surfacing the caught fish would be taken by the hunter and portions shared with the bird in a kind of underwater falconry.

Even today fisheries and farmers depend on marine birds for their guano, a word originated from the Quichua language of the Incas meaning "the droppings of seabirds." Because guano releases nutrients to the biological system, not only was it important for habitats surrounding seabird colonies, it became an important part of the agriculture in the United States during the 1800's. On August 18, 1856, Congress passed the Guano Islands Act authorizing citizens of the United States to take possession of and occupy any unclaimed island, rock or key containing guano.

And yet, even with an understanding of the importance of seabirds and marine mammals, breeding colonies are disrupted and their populations are dwindling. In the last 200 years, due to hunting, egg collection, oceanic pollution and other environmental disturbances, seabird numbers have dropped significantly and in some cases led to extinction of species.

Once indicators of fertility and a safe place for mariners to land, marine birds are now essential indicators of the health of habitats and ecosystems. Through observation and data collection of migration patterns, breeding behaviors, nesting habits, and impacts of human disturbance, volunteers, scientists, and naturalists are rebuilding a broken connection with their coastal landscapes. While seabird monitoring will hopefully lead to an increase of breeding colonies, perhaps of equal importance are the lessons seabirds offer people as we watch these unique animals find home under the water, on the land, and in the air.

Stewards and its partners extend great appreciation for your willingness to participate not only in data collection, but also for rebuilding awareness and respect for these remarkable marine species.

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SECTION 1: CONTEXT

1.1 Background

On April 20th, 2011 Stewards of the Coast and Redwoods (Stewards) entered into a Memorandum of Understanding (MOU) with the Bureau of Land Management (BLM) California State Office. A separate Letter of Intent with the Seabird Protection Network was signed on January 2013. Together these agreements created a program that monitors mainland seabird colonies as well as colonies on the islands, rocks and pinnacles above mean high tide within twelve nautical miles offshore that are a part of the California Coastal National Monument (CCNM). Cooperatively, Stewards, BLM, Seabird Protection Network, California Department of Parks and Recreation, and Madrone Audubon Society monitor the populations of seabirds on islands within the CCNM and California State Parks. These islands and mainland colonies are located along the Sonoma County Coast in CCNM Units 14 and 15.

The long-term goal of this project is to establish a robust seabird monitoring protocol that replicates systematic observational methods for the islands of the California Coastal National Monument over many years. Creating a multiyear database of observations provides important information about patterns and trends of seabird species, which use the CCNM for nesting, birthing, rearing, resting, and roosting. This project imparts invaluable knowledge to the volunteers regarding Monument islands and their animal inhabitants. It also fosters learning and appreciation of these nationally important resources.

This document provides in depth protocols undertaken by Stewards with assistance from the project partners and volunteers. The monitoring partners believe that consistent protocol and documentation is critical for informing the public about the scope of monitoring and sharing methods for replicating the same tasks in future years at other sites.

1.2 Biological Concerns

Stewards, the BLM, and its partner wildlife agencies want to obtain observations of seabirds to establish preliminary information about islands that furnish habitat for certain seabird species, especially breeding habitat. This effort fills a gap in knowledge about habitat use for offshore islands such as Bodega Rock and Gull Rock, which biologists have not studied closely until now (Weigand and McChesney 2008). Monitoring seabird activity year round and during the breeding season can be useful in determining population trends, migration patterns, roosting and resting sites, life cycle habits, and behavior of species over multiple years. Human disturbances have significant impact on the reproduction of these species; therefor Stewards volunteers will also monitor human disturbances impacting seasonal breeding and year round resident seabirds.

1.3 Monitoring Sites

The region of geographic focus encompasses the following offshore rocks and seabird colonies, stretching from Bodega Bay to the mouth of the Russian River. (Please see Figure 1)

The vantage points and times for monitoring sites were established in Summer 2013. These established vantage points ensure consistency of monitoring from year-to-year.

PDF files containing the detailed Stewards/CCNM baseline monitoring maps can be obtained from the partnership. The maps note islands with specific identification numbers. The use of the word “islands” within the body of this protocol also includes and refers to all rocks, islands, and pinnacles within the Stewards’ monitoring area.

Figure 1 Map of Stewards study area, California



Figure 2 Gleason Rock breeding colonies and study area



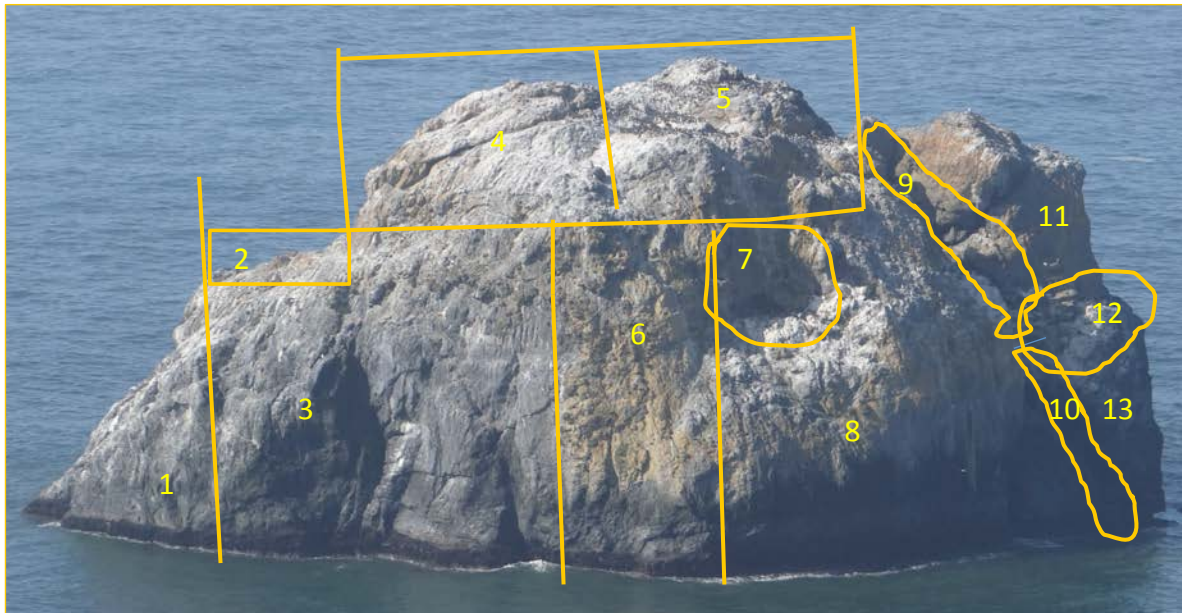
Figure 3 Gleason Rock Vantage Point So1



Figure 4 Gleason Rock Vantage Point with Pelagic Cormorants



Figure 5 Gull Rock Geography



Gull Rock Locations

- 1. South Slope
- 2. South Plateau
- 3. South Face
- 4. Top South

- 5. Top North
- 6. Middle Face
- 7. The Cave
- 8. North Face

- 9. Upper Crevice
- 10. Lower Crevice
- 11. North Bump
- 12. North Shelf
- 13. North Cliff

Figure 6 Gull Rock Vantage Point from Sunset Rock



Figure 7 Bodega Rock on 6/30/2012 showing the Brandt's cormorant colony and California sea lions. Sea lions avoid the guano washed area.



Figure 8 Brant's Cormorant's Colony on Bodega Rock 5/6/2012



Figure 9 Bodega Head and Rock monitoring area



Figure 10 Trails to vantage points on Bodega Head



Figure 11 Vantage and Beacon points on southern Bodega Head from the improved main trail.



1.4 Species of Interest

Based on previous censuses of seabirds within the study area, the BLM staff and Stewards selected the following species of interest for monitoring during the breeding and non-breeding seasons:

BREEDING SEASON

Bird Species

Black Oystercatcher	(<i>Haematopus bachmani</i>)
California Brown Pelican	(<i>Pelecanus occidentalis</i> ssp. <i>californicus</i>)
Canada Goose	(<i>Branta canadensis</i>)
Common Murres	(<i>Uria aalge</i>)
Common Raven	(<i>Corvus corax</i>)
Brandt's Cormorant	(<i>Phalacrocorax penicillatus</i>)
Double Crested Cormorant	(<i>Phalacrocorax auritus</i>)
Pelagic Cormorant	(<i>Phalacrocorax pelagicus</i>)
Western Gull	(<i>Larus occidentalis</i>)
Pigeon Guillemot	(<i>Cephus columba</i>)

Brown Pelicans, Common Ravens, and Western Gulls are known predators of seabirds and rob unprotected nests of their eggs or small chicks during breeding season. Nest robbing by these predators disturbs breeding birds and can affect reproduction.

NON-BREEDING SEASON

Bird Species

Black Oystercatcher	(<i>Haematopus bachmani</i>)
California Brown Pelican	(<i>Pelecanus occidentalis</i> ssp. <i>californicus</i>)
Canada Goose	(<i>Branta canadensis</i>)
Common Murres	(<i>Uria aalge</i>)
Common Raven	(<i>Corvus corax</i>)
Brandt's Cormorant	(<i>Phalacrocorax penicillatus</i>)
Double Crested Cormorant	(<i>Phalacrocorax auritus</i>)
Pelagic Cormorant	(<i>Phalacrocorax pelagicus</i>)
Heermann's Gull	(<i>Larus heermanii</i>)
Western Gull	(<i>Larus occidentalis</i>)
Pigeon Guillemot	(<i>Cephus columba</i>)

1.5 The Monitoring Group

The monitoring group (MG), a group of Stewards volunteers, is responsible for developing a comprehensive, long-term monitoring program of the CCNM just offshore from the Sonoma Coast. This effort is important to understand the status and trends of the natural resources located there. The knowledge gained will serve as the basis for making decisions, working with other agencies including the CCNM managing partners, and communicating with our members and coastal neighbors how best to protect the natural systems and native species.

The MG is additionally responsible for leading all monitoring efforts. The MG and its scientific consultants are responsible for protocol documentation, developing and conducting training workshops, coordinating volunteers, equipment, and logistics for monitoring activities, oversight of the data management process, quality assurance and control.

SECTION 2: PROTOCOL DOCUMENTATION

2.1 Overview of Monitoring Protocols

To monitor seabird colonies from mainland vantage points entails periodic observations throughout the year and intensive observations during the breeding season. Stewards monitoring efforts include monitoring seabirds nesting or roosting on multiple CCNM islands offshore of the Sonoma Coast. The modified protocol, established by McChesney et al. (2007) for monitoring Brandt's Cormorants at nesting colonies in coastal California, includes observations of breeding species on **Bodega Rock, Gleason Beach, and Gull Rock.**

Goal: Monitor seabird species from the mainland at different times of the year for baseline information. Throughout the year, three types of surveys are conducted:

- Coastal Island Survey (quarterly)
- Breeding Season Monitoring (weekly between April 1 and August 31)
- Non-Breeding Season Monitoring (monthly between September and March)

This also protocol includes monitoring disturbances, both natural and human-caused, to seabirds and marine mammals during the monitoring period.

2.2 Safety and Security

Safety is a very important concern for Stewards and for the BLM. Care is needed to avoid site hazards along trails and at vantage points near ocean bluffs and cliffs. Ocean bluffs often consist of soils that are unstable and prone to erosion. Frequent rain, mist, and fog make the ground slippery. A component of training is to communicate the awareness of safety.

Stewards recommends (1) monitoring in teams of at least two due to safety hazards; (2) carrying a cell phone; and (3) memorizing some of the emergency phone numbers included in the tote bags.

2.3 Training

Training workshops are held before the beginning of each monitoring periods: Quarterly Coastal Island Survey, Non Breeding Survey, and Breeding Survey. The workshop covers: purpose of each survey, the areas surveyed, data sheets and forms, quality control and quality assurance and natural history. Field practice is done in small groups before the survey period to provide hands-on training with emphasis on locating nests and using forms.

2.4 Field Equipment

The following field equipment is required for seabird monitoring:

1. Stock of Field Sheets
 - i. Coastal Island Survey
 - ii. Seabird (Breeding or Non-Breeding) Survey Sheet
 - iii. Wildlife Disturbance Reporting Form
 - vi. Legend Code Sheet
 - vii. Tide Log Information
 - ix. Seabird Species Identification Sheets and Photos
2. Mechanical pencils for recording data
3. Clipboard
4. Kestrel Meter- pocket weather station
5. Compass

6. GPS Unit
7. Spotting Scope
8. Digital Camera
9. Clothing to accommodate changing weather conditions
10. Binoculars
11. Water and snacks
12. Cellular telephone (with emergency numbers)
13. First-aid supplies
14. Flashlight

* Stewards will supply Items 1 through 8.

** Items 9 - 14 recommended for comfort and safety

2.5 Spotting Scopes

Stewards makes available one high-quality spotting scope for monitoring. Volunteers who have their own scopes are encouraged to use them until Stewards has a sufficient inventory of spotting scopes for program volunteers to use. Scopes used for monitoring must have a magnification of at least 20x.

2.6 Logistics for Seabird Monitoring

During the monitoring periods the Coordinator schedules Stewards members, volunteers and partnered biologists to insure that all shifts are staffed during the monitoring periods. This person also coordinates scheduling equipment and data sheet collection.

The Coordinator contacts the volunteers to confirm the day and time of their shifts. In addition, the Coordinator is responsible for the inventory of tote bags, tote bag contents, scopes and all other shared equipment. Volunteers may use their own spotting scopes. Alternatively, and depending on availability, they may use a Stewards spotting scope. Monitors are responsible for picking up and returning the spotting scope to the Stewards locked storage site at the end of each shift.

Once volunteers have been assigned a time they will pick up data sheets, necessary supplies and equipment from the Jenner Visitor's Center (JVC) or a facility closer to Bodega Bay. When monitoring has been completed, equipment and data sheets will be returned to the JVC on the same day. Data manager volunteers will scan the data sheets once a month. The scanned data will then be entered into an Excel spreadsheet. Original data sheets will be kept at the Stewards office. Volunteers are responsible for submitting their stipend forms directly to the Stewards office, which will then be handled by the Stewards Administrative Director.

Before the start of the monitoring periods, Stewards members and other volunteers sign up with the Coordinator to indicate their preferences for monitoring tasks and their schedule of availability for each task.

2.7 Training

Training workshops are held before the beginning of monitoring periods:

- 1- Quarterly Coastal Island Survey
- 2- Non Breeding Survey
- 3- Breeding Survey.

The training workshops cover purpose of each survey, the areas surveyed, data sheets and forms, quality control and quality assurance and natural history. Field practice is done in small groups

before the survey period to provide hands-on training with emphasis on locating nests and using forms.

2.8 Monitoring

Goal: Monitor seabird species from the mainland at different times of the year for baseline information.

This protocol covers the following monitoring activities:

- Coastal Island Survey (quarterly) encompasses CCNM islands off the coast of the study area.
- Breeding Season Monitoring (weekly between April 1 and August 31) encompasses three CCNM island groups off the coast of the study area.
- Non-Breeding Season Monitoring (monthly between September and March) encompasses three CCNM island groups off the coast of the study area.

2.8.1 Coastal Island Survey

The Coastal Island Survey (quarterly) encompasses CCNM islands off the coast of the study area.

The Coastal Island Survey is undertaken *quarterly* in February, May, August, and November, at a minimum. As volunteers' free time permits, other surveys may take place any other time of the year or multiple times in February, May, August and November. Because these islands have not been routinely monitored in the past, initial data collection is considered *baseline* monitoring.

Islands in the CCNM off the coast of the study area are surveyed for birds, mammals, plants and other taxa.

Teams are assigned specific sections of the study area to monitor during the third week (including both weekends) of the monitoring month. Surveys should start 60 to 90 minutes before high tide. Each team consists of two or more people. Initial reconnaissance may require four hours to complete a section. Subsequent surveys may require approximately two hours. Volunteers complete the monitoring shift on the scheduled day and at the specified time. If fog or weather conditions impede the counts on the planned day of the walk, the team may complete the count on another day within the same week.

2.8.2 Breeding Season Monitoring

Breeding Season Monitoring (weekly between April 1 and August 31) encompasses three CCNM island groups off the coast of the study area: Bodega Rock, Gleason Beach, and Gull Rock. For this monitoring effort, volunteers complete the Breeding Seabird Survey data sheets.

Each monitoring team consists of two or more people. The survey includes seabird census, behavioral notes, and individual nest monitoring when nests are present. The team monitors for at least one hour at each vantage point. Censuses occur during one hour only. One daytime monitoring shift takes place weekly during the breeding season. This seabird monitoring shift is scheduled at the same time each week for consistency of data. Times may vary between sites; therefore trainers will advise volunteers upon the best time to monitor a specific site. If fog or weather conditions interfere with the counts on the planned day or at the scheduled time, the team

may schedule the count on another day as close to the planned day as possible and at the same time of day. Volunteers are encouraged to complete the monitoring shift on the scheduled day.

Daytime Land Photography is scheduled on the same day each week. Photography will take place during the same time volunteers are monitoring for seabird activity. Not all vantage points may be routinely photographed due to scheduling conflicts.

2.8.3 Non-Breeding Season Monitoring

The Non-Breeding Season Monitoring (monthly between September 1 and March 31) encompasses three CCNM island groups off the coast of the study area: Bodega Rock, Gleason Beach, and Gull Rock. For this monitoring effort, volunteers complete the Non-Breeding Seabird Survey data sheets.

Each monitoring team consists of two or more people. The team takes one hour to census at each site. One daytime monitoring shift takes place monthly during the non-breeding season, ideally an hour after sunrise. This shift is conducted during the same week of each month. If fog or weather conditions interfere with the counts at the planned day and time, the count can be completed on another day and/or time as close to the scheduled day and time as originally scheduled. Volunteers are encouraged to complete the monitoring shift at the planned day and time. The purpose of this survey is to detect who is roosting throughout the year to attain baseline data and update distribution maps.

2.9 Data Sheets & Data Collection

2.9.1 Ambient Variables (for all survey sheets)

Goal: Collect uniform information about environmental conditions at the time data are being collected.

Date

Use the Federal Information Processing Standard form: YYYYMMDD, where YYYY is the numeric year
MM is the numeric month and
DD is the numeric day of the month.

Thus, 04 July 2009 is recorded as **20090704**.

Data Recorder

Enter here the full name of the person who is the data recorder. The same person should act as data recorder for an entire monitoring shift.

Observers

Enter the full names of the people on the monitoring team who are observing during the shift of monitoring.

Start Time

Use the 24-hr clock format, commonly referred to as “military time.” **Start Time** is the time when the observers *begin* monitoring.

Stop Time

Use the 24-hr clock format, commonly referred to as “military time.” **Stop Time** is the time when the observers conclude monitoring for both total seabird populations.

Cloud Cover Percent

This is a visual estimate, to the closest 10%, of cloud cover as viewed directly above the monitoring point at the **Start Time**.

If the Cloud Cover Percent changes during the monitoring shift, make a note of the new percent and the time of the change in the **Additional Notes and Observations** section of the field sheet.

Wind Speed

Record the wind speed given on the Kestrel Meter (a pocket weather station) at the start of monitoring. If the wind speed changes during the monitoring shift, make a note of the range of wind speeds during the monitoring period and the ending wind speed in the **Additional Notes and Observations** section of the field sheet.

Precipitation

Record the precipitation given on the Kestrel Meter. If the precipitation changes during the monitoring shift, make a note of the new precipitation and the time of the change in the **Additional Notes and Observations** section of the field sheet.

Air Temperature

Record the air temperature at the monitoring site in degrees **Celsius** at the **Start Time** from the Kestrel Meter. If the air temperature changes during the monitoring shift, make a note of temperature at the end of the monitoring shift and note the new temperature and the time of the change in the **Additional Notes and Observations** section of the field sheet.

Value of Low Tide

This value is entered by the data manager at a later time and not recorded in the field. The low tide time and level values are the NOAA tide predictions for Bodega Bay. The tide level recorded is for the low tide closest in time to the **Start Time**.

2.9.2 Coastal Island Survey Data Sheet

Goal: To collect baseline biotic information across all seasons on the CCNM offshore of the study site. Monitors will collect data on specific species of shore and seabirds that may also nest on the mainland rocky shoreline and headlands for population and habitat information.

NOTE: During the 2nd Quarterly survey in May, observers are asked additionally to record under Notes and Additional Observations:

1. Pelagic Cormorant nesting sites on the mainland; record number of nests and describe location and gather GPS datum.
2. Black Oystercatcher behavior, pair status or nest activity observed on the islands or the mainland; record type of activity observed and describe location

Throughout the year, the Coastal Island Survey data sheet is used for all quarterly shifts of seabird counts. Refer to the appendix for the “Coastal Island Survey” forms. Information gathered on this survey data sheet is also given to the Plant Specialist team for follow-up to identify plant species at a later time.

For Ambient Variables refer to Section 2.7.2

When multiple lines are entered for observations on the same island, please put ditto (“) marks as appropriate in the Island Arrival Time, Island Number, and Location fields on subsequent lines. Doing so ensures no ambiguity regarding which island or observation location the data apply to.

Island Arrival Time

Record the time when the team begins observing at a specific site.

Island (or Archipelago) Name(s)

To assist volunteers in their monitoring efforts, names of island and archipelago groupings of islands are pre-printed on the Coastal Island Survey forms for each segment of the study area. Pre-printing the numbers is a convenience to save writing while on the trail; it does not mean a group must monitor every island or archipelago every time.

If an island or archipelago printed on the form is not monitored, cross it out on the form by drawing a horizontal line through the value in “island or archipelago”.

For observations about areas not part of the CCNM (e.g. notes about nests on the bluff, or seabirds on the shoreline), enter observations in the “Notes and Additional Observations” section, entering “OTHER” in place of the Island Name.

Roosting Birds (Species and #)

Record the four-letter USGS abbreviation code for the species of birds observed ON the island. Refer to the Legend Codes sheet for the abbreviations of the bird species most likely to be observed. If you observe a bird species for which there is no Legend Code, record the four-letter USGS abbreviation code for that species, if known. Alternatively, enter the full common English name of the observed species. If no birds are observed to be roosting on the island, enter 0 (zero) in both the Species and the “#” column.

Record the number of birds of each species observed ON the island or archipelago. Use a 0 (zero) to indicate that no birds of a particular species and age group are observed. Count only birds that are physically in contact with the island. Use an X *only* to indicate no data collected due to fog, high tides covering the islands, or other conditions that prevent observation of the island or archipelago.

Nesting Birds (Species and #)

Record the four-letter USGS abbreviation code for the species of birds observed nesting on the island or archipelago. Refer to the Legend Code sheet for the abbreviations of the bird species most likely to be observed. If you observe a bird species for which there is no Legend Code, record the four-letter USGS abbreviation code for that species, if known. Alternatively, enter the full common English name of the observed species. If no birds are observed nesting on the island, enter 0 (zero) in *both* the Species and the “#” column.

Nesting is defined when a pair bond has been established with 1 or 2 adult birds continuously at an active nest site or territory. Nest occupation consists of a nest early in the season with adults in incubation posture and/or eggs seen, or a site or territory with chicks during mid- or late-season (as nests may deteriorate as chicks become mobile).

Record the number of adult birds of each species observed nesting on the island or archipelago. Use a 0 (zero) to indicate that no birds are observed. Use an X *only* to indicate no data collected due to fog or other conditions that prevent observation of the island or archipelago.

Marine Mammals (Species and #)

Record the two- or three-letter abbreviation code for the species of pinniped species observed *on* the island or archipelago. Refer to the Legend Codes sheet for the abbreviations of the pinniped species most likely to be observed. If you observe a pinniped species for which the Legend Code has no code, record the full common English name of the observed species. If no marine mammals species are observed on the island, enter (a zero) in both the Species and the “#” column.

Record the number of pinnipeds of each species observed hauled out on the island or archipelago. Use a 0 (zero) if no marine mammal species is observed. Use an X *only* to indicate no data collected due to fog or other conditions, which prevented observation of the island or archipelago.

Terrestrial Plants (Y / N)

Record a “Y” (Yes) if plants (terrestrial vegetation) are observed on the island or archipelago. Record an “N” (No) if no plants are observed. Record an “X” to indicate no data collected due to fog or other conditions that prevent observation of the island or archipelago, or if observers do not look for terrestrial plants. Do not record information regarding marine or terrestrial algae in this field.

Other Taxa

Record a “Y” (Yes) if other taxa are observed on the island or archipelago. Record “N” (No) if no other taxa is observed. Record an “X” to indicate no data collected due to fog or other conditions that prevented observation of the island or archipelago, or if observers do not look for other taxa. To assist monitoring efforts, the most common types of Other Taxa are pre-printed on the form. Check the applicable box when these are observed on the island or archipelago. If Other Taxa are observed but cannot be identified, check “unknown”. If Other Taxa are observed and identified but are not pre-printed on the form, check “other” and write in the name of what is observed.

Note here if marine or terrestrial algae are visible on the island or archipelago.

Location Description

Record the UTM coordinates if a GPS unit is available at the time of the survey. Otherwise, or in addition to the UTM coordinates, describe in sufficient detail the location from which the island is observed.

Mark on the field map the approximate location of the observation location.

DO NOT LEAVE ANY OF THE ABOVE FIELDS BLANK. *However, an elongated “X” can be drawn across all of the data fields if the island is under water, or it is too foggy to see the island or archipelago*

Notes and Observations

Use this section to add additional information regarding species or other items of interest observed on a specific island or archipelago. Record the corresponding island or archipelago number for reference. The back of the form is available for additional writing space.

2.9.3 Seabird Survey Data Sheets

During the breeding, non-breeding and nesting period, the data sheet SEABIRD SURVEY is used for all monthly and weekly shifts of seabird counts. Refer to the appendix for copies of the “Breeding Seabird Survey” and “Non-Breeding Seabird Survey” forms.

For Ambient Variables, refer to Section 2.9.1. Additional fields to be completed are:

Colony

Use the California Colony Name (e.g. Bodega Rock or Gleason) for which the vantage point is designated. Refer to Figure 2 for the colony locations. For the study, the following names and codes apply:

Bodega Rock	BR
Gleason Beach	GB
Goat Rock	GR

Vantage Point

Allowable values for Gleason Beach are “NO1” for the north vantage point and “SO1” or “SO2” for the southern vantage points.

Species Variables Recorded on the Seabird Survey Data Sheets

Species Codes

The codes for the bird species most likely to be seen are abbreviations used by the USGS Patuxent Wildlife Research Center, Bird Banding Laboratory. The Legend Codes sheet contains the list of breeding and non-breeding species normally found on CCM rocks and islands in Units 14 and 15.

The most commonly observed species are pre-printed on the Seabird Survey data sheets. Other species can be written in when they are observed. Recorded species comprise only those birds or mammals that are physically ON the islands (i.e., above the tide line at the time of observation). Birds not seen actually landed on islands are not tallied as part of the census, including birds that likely land on the island but are out of view from the vantage points. Unusual birds flying by the island are listed in the notes accompanying the data sheet but are not counted as part of the census. Refer to **Additional Notes and Observations** below. The tally for each species and age class is the highest number of individual birds seen at any one time during the monitoring period. The tally is not a cumulative total of all birds seen during the monitoring period.

BRAC (Brandt’s Cormorant)

Counts of Brandt’s Cormorants are divided among three age classes defined by body size and plumage features.

BRAC Mobile Chicks

Counts of this, the youngest, age cohort of Brandt’s Cormorants rely on noting uniformly dark birds less than fully grown (i.e., not fully-feathered; may have down covering parts of body), mobile on foot (but not fledged) or are capable of walking

outside the perimeter of a Brandt's Cormorant nest. Fledged is defined for a young bird as having the plumage needed to fly. Birds in the mobile chick category are not capable of flight.

Count in this total any injured birds if present but do not count dead birds if present.

BRAC Juveniles

Counts of the first-year age cohort of Brandt's Cormorants rely on noting the light brown or tan-colored breast and the dull, mostly non-iridescent plumage on the back. These birds are capable of flight.

Count in this total any injured birds if present but do not count dead birds if present.

BRAC Adults

Counts of the adult cohort of Brandt's Cormorants rely on noting the black breast and neck of the individual bird. White breeding plumes and blue gular pouch may help distinguish adults during the breeding season.

Count in this total any injured birds if present but do not count dead birds if present.

BRAC Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

BRAC Injured

Total here all the injured Brandt's Cormorants noted during the current census. These birds are also counted in one of the previous four categories of plumage characterization.

BRAC Dead

Total here all the dead Brandt's Cormorants noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

Make a note of the plumage under **BRAC Notes** if the plumage type of the dead bird is not discernible.

BRAC Notes

Make notes of significant information or observations in regard to Brandt's Cormorants counted here.

BRPE (Brown Pelican)

Counts of Brown Pelicans are divided among three age classes defined by plumage features.

BRPE Brown Head / White Belly

Counts of this, the youngest, age cohort of Brown Pelicans relies on noting the fully brown or dusky coloration of the entire head plus the white belly of the individual bird.

Count in this total any injured birds if present but do not count dead birds if present.

BRPE White Head/ Light Belly

Counts of this, the intermediate, age cohort of Brown Pelicans rely on noting the light crown and nape (sometimes with residual dusky feathers) plus the white to light dusky (but not dark brown) belly of the individual bird.

Count in this total any injured birds if present but do not count dead birds if present.

BRPE White Head/ Dk. Brown Belly

Counts of the adult cohort of Brown Pelicans rely on noting the dark brown belly of the individual bird. Depending on the time of year, the crown and nape are whitish and white respective (non-breeding) or yellow and dark brown (breeding).

Count in this total any injured birds if present but do not count dead birds if present.

BRPE Unknown

Total here the number of birds whose plumage are not visible clearly enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

BRPE Injured

Total here all the injured Brown Pelicans noted during the current census. These birds are also counted in one of the previous four categories of plumage characterization.

BRPE Dead

Total here all the dead Brown Pelicans noted during the current census. These birds have not been counted in one of the previous four categories of plumage characterization.

Make a note of the plumage under **BRPE Notes** if the plumage type of the dead bird is not discernible.

BRPE Notes

Make notes of significant information or observations in regard to Brown Pelicans counted here.

NOTE: Refer to the following websites for more information on plumages of Brown Pelicans:

http://www.oceanlight.com/lightbox.php?sp=Pelecanus_occidentalis

CANG (Canada Goose)

CANG mobile chicks

Counts of this, the youngest, age cohort of Canada Geese, are smaller than the adult geese and covered in yellow down feathers. Mobile on foot (but not fledged) or are capable of walking outside the perimeter of a nest. At this stage, they can have some yellow down feathers, and some gray feathers similar to the adults. Fledged is defined for a young bird as having the plumage needed to fly. By the time chicks are ready to fly, they will have plumage similar to the adult. Birds in the mobile chick category are not capable of flight

Count in this total any injured birds if present but do not count dead birds if present.

CANG Juveniles

Counts of the first-year age cohort of Canada Geese will look nearly identical to the adults; they may be a little smaller. The feathers will look fresher. These birds are capable of flight and will probably have left the nest site by this stage, or very soon upon acquiring a full set of flight feathers.

Count in this total any injured birds if present but do not count dead birds if present.

CANG Adults

Counts of the adult cohort of rely on noting a bird full-grown in size. They have brown backs and bellies, black necks, and white cheek patches.

Count in this total any injured birds if present but do not count dead birds if present.

CANG unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

CANG Dead

Total here all the dead Canada Geese noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

COMU (Common Murre)

Counts of Common Murres are divided among three age classes defined by body size and plumage features.

COMU Mobile Chicks

Counts of this, the youngest, age cohort of Common Murres rely on noting that they are not as large as the adult Common Murres. They also have white throats and a dark line through the eye, similar to adults in non-breeding plumage. Birds in the mobile chick category are not capable of flight. Common Murres will enter the sea before they are capable of flight (before they actually fledge).

Count in this total any injured birds if present but do not count dead birds if present.

COMU Juveniles

Birds in this category should be out at sea, and not present in the breeding colonies.

Count in this total any injured birds if present but do not count dead birds if present.

COMU adult breeding

Counts of the adult breeding cohort of Common Murres rely on noting the dark brown face and throat, contrasting with white bellies.

Count in this total any injured birds if present but do not count dead birds if present.

COMU adult nonbreeding

Counts of the adult nonbreeding cohort of Common Murres rely on noting white throats in addition to the white bellies with a dark line through the eye. They look similar to the mobile chicks, except they are full-grown. They are unlikely to be seen in the breeding colonies as they are only in this plumage for about 2 months in the fall.

Count in this total any injured birds if present but do not count dead birds if present.

COMU Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

COMU Dead

Total here all the dead Common Murres noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

COMU Notes

Make notes of significant information or observations in regard to Common Murres counted here.

DCCO (Double Crested Cormorant)

Counts of Double Crested Cormorants are divided among three age classes defined by body size and plumage features.

DCCO Mobile Chicks

Counts of this, the youngest, age cohort of Double-crested Cormorants rely on noting uniformly dark birds less than fully grown (i.e., not fully-feathered; may have down covering parts of body), mobile on foot (but not fledged) or are capable of walking outside the perimeter of a nest. Fledged is defined for a young bird as having the plumage needed to fly. As birds change from the downy stage to the fledgling stage, they replace the dark downy feathers with dark brown feathers on the back and

variably dark brown to white feathers on the throat, chest and belly. Birds in the mobile chick category are not capable of flight.

Count in this total any injured birds if present but do not count dead birds if present.

DCCO Juveniles

Counts of the first-year age cohort of Double-crested Cormorants rely on noting the light brown, tan, or white -colored throat, breast and belly; and the dull, mostly non-iridescent plumage on the back. They have conspicuous orange throats or gular pouches. These birds are capable of flight.

Count in this total any injured birds if present but do not count dead birds if present.

DCCO Adults

Counts of the adult cohort of Double-crested Cormorants rely on noting the jet-black breast and neck of the individual bird. They have bright orange gular pouches (beware of tan feathering under hidden gular pouches of Brandt's Cormorants). There is a short time at the beginning of the breeding cycle when adults have crests on their heads. These crests can be white or mottled with white and black.

Count in this total any injured birds if present but do not count dead birds if present.

DCCO Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

DCCO Dead

Total here all the dead Double-crested Cormorants noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

DCCO Notes

Make notes of significant information or observations in regard to Double Crested Cormorants counted here.

PECO (Pelagic Cormorant)

Counts of Pelagic Cormorants are divided among three age classes defined by body size, age and plumage features.

PECO Mobile Chicks

Counts of this, the youngest, age cohort of Pelagic Cormorants rely on noting uniformly dark birds less than fully grown (i.e., not fully-feathered; may have down covering parts of body), mobile on foot (but not fledged) appearing outside the perimeter of a Pelagic Cormorant nest. Fledged is defined for a young bird as having the plumage needed to fly. Birds in the mobile chick category are not capable of flight.

Few mobile chicks of Pelagic Cormorants are expected because their nesting habitat on ledges does not afford much opportunity to be mobile by foot away from the nest.

Count in this total any injured birds if present but do not count dead birds if present.

PECO Juveniles

Counts of the first-year age cohort of Pelagic Cormorants rely on the following features: (1) facial skin ash-colored with a pink gular patch; (2) gray head and gray and black neck; (3) upper parts blackish, somewhat glossed with dull green, turning brown with exposure to sun; and (4) under parts slightly paler gray.

Count in this total any injured birds if present but do not count dead birds if present.

PECO Adults

Counts of the adult cohort of Pelagic Cormorants rely on the following feature in the non-breeding season: all feathering black with metallic gloss that may reflect different colors (green, bronze, violet), becoming worn and dull brown by the end of the breeding season.

Birds in breeding plumage are easier to discern because they have (1) white flank patches; (2) white neck plumes; (3) two small crests – one on the forehead and one at the top of the nape; and (4) a small but noticeable red chin patch at the base of the bill.

Pelagic Cormorants acquire first nuptial plumage and reproductive maturity at 2 to 3 years of age. Birds not in breeding plumage by April are considered to be non-breeding juveniles.

Count in this total any injured birds if present but do not count dead birds if present.

PECO Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Discerning juvenile and adult birds may not be possible under some viewing conditions. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

PECO Injured

Total here all the injured Pelagic Cormorants noted during the current census. These birds are also counted in one of the previous four categories of plumage characterization.

PECO Dead

Total here all the dead Pelagic Cormorants noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

Make a note of the plumage under **PECO Notes** if the plumage type of the dead bird is not discernible.

PECO Notes

Make notes of significant information or observations in regard to Pelagic Cormorants counted here.

BLOY (Black Oystercatcher)

Counts of Black Oystercatchers are divided among three age classes defined by plumage features.

BLOY Mobile Chicks

Counts of the youngest stage cohort of Black Oystercatchers rely on the following features: (1) dull brown feathering on the back, back of the neck and wings; and (2) the dull red often tipped with sepia (dark brown). Black Oystercatcher chicks often hide and do not move much, especially if parent birds are absent.

Count in this total any injured birds if present but do not count dead birds if present.

BLOY Juveniles

Counts of juvenile Black Oystercatchers (< 3 months old) rely on the following features: head and neck jet black; body and upper wing surface dark grayish brown, and feathers of rump, flank, abdomen, and scapulars, under-tail coverts, and upper wing coverts edged with tawny. The juveniles will also have a shorter bill of duller color in comparison to the adults.

Count in this total any injured birds if present but do not count dead birds if present.

BLOY Adults

Counts of the adult cohort of Black Oystercatchers rely on the following features: (1) uniformly black to glossy black plumage; and (2) bright red bill, often tipped with orange-red.

Count in this total any injured birds if present but do not count dead birds if present.

BLOY Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous two age cohorts or whose plumage appears to be outside the range of the classification. Discerning juvenile and adult birds may not be possible under some viewing conditions. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

BLOY Injured

Total here all the injured Black Oystercatchers noted during the current census. These birds are also counted in one of the previous four categories of plumage characterization.

BLOY Dead

Total here all the dead Black Oystercatchers noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

Make a note of the plumage under **ABOY Notes** if the plumage type of the dead bird is not discernible.

BLOY Notes

Make notes of significant information or observations in regard to Black Oystercatchers counted here.

WEGU (Western Gull)

Counts of Western Gulls are divided among four age classes defined by plumage features and body size.

WEGU Mobile Chicks

Counts of this, the youngest, age cohort of Western Gulls rely on noting the fully brown or dusky coloration of birds less than fully grown, mobile on foot (but not fledged) outside a Western Gull nest. Western Gull chicks can become mobile as early as two days after hatching. Chicks that have fledged are fully feathered and capable of flight. They now qualify as “brown and full-grown” juveniles. Fledged birds may return to the original nest site, especially in the evening, sometimes for up to a year after hatch. Fledged birds are not counted as mobile chicks but as Brown Full-Grown.

Count in this total any injured birds if present but do not count dead birds if present.

Do not include in this total any chicks that are still in the nest and being counted on the Nest Survey form. (Note: Once all chicks leave a nest and are mobile out of the nest perimeter, that nest number is crossed off on the photograph and the seabird nest survey form by being recorded as AB or D and drawing a line through the rest of the row of data fields for that nest.)

As supplementary data, if observers have time to make an accurate count of mobile Western Gull chicks during their shifts at 06:30 and 9:00, they may do so on the Breeding Seabird Survey sheet. If observers do not make a supplemental count of WEGU mobile chicks, they enter an “X” in the cell designated for WEGU mobile chicks on the Breeding Seabird Survey sheet.

During the weekly Breeding Season Surveys the mobile chicks are counted by the monitoring team and recorded on the Breeding Seabird Survey sheet.

WEGU Brown Full-Grown

Counts of this first-year age cohort rely on noting the overall brownish appearance, with having brown or black tips. First summer birds may have whitish wings. These birds are capable of flight. They may look similar to nearly full-grown Western Gulls that have not yet fledged.

Count in this total any injured birds if present but do not count dead birds if present.

WEGU Grayish Back Brownish Head

Counts of the second-year cohort of Western Gulls rely on (1) the mostly dark gray back; (2) wings with mixed with brown and gray feathers, (3) the head with a brownish cast; and (4) white rump.

Count in this total any injured birds if present but do not count dead birds if present.

WEGU Gray Back White Head

Counts of this cohort are for birds three years or older and rely on the following traits: (1) white or nearly entirely white head; and (2) gray to dark gray back and wings with distinct black wing tips.

Count in this total any injured birds if present but do not count dead birds if present.

WEGU Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous four age cohorts or whose plumage appears to be outside the range of the classification. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

WEGU Injured

Total here all the injured Western Gulls noted during the current census. These birds are also counted in one of the previous five categories of plumage characterization (see above).

WEGU Dead

Total here all the dead Western Gulls noted during the current census. These birds are also counted in one of the previous five categories of plumage characterization (see above).

Make a note of the plumage under **WEGU Notes** if the plumage type of the dead bird is not discernible.

WEGU Notes

Make notes of significant information or observations in regard to Western Gulls counted here.

PIGU (Pigeon Guillemot)

Counts of Pigeon Guillemots are divided among three age classes defined by body size and plumage features.

PIGU Mobile Chicks

PIGU mobile chicks are not often seen because their nesting habitat in burrows and crevices does not afford much opportunity for viewing chicks on foot away from the nest, where they would become prey. This category is retained for consistency with the counts of the other species and may be removed in subsequent years from data sheets if mobile chicks are totally absent in 2014.

Counts of this, the youngest, age cohort of Pigeon Guillemots rely on noting uniformly blackish-brown birds less than fully grown, mobile on foot, but not fledged, appearing just inside the burrow entry or just outside the burrow containing a pigeon guillemot nest. Fledging for PIGU is defined as leaving the burrow when mostly- to fully-feathered and capable of flight.

Count in this total any injured birds if present but do not count dead birds if present.

PIGU Juveniles

PIGU Juveniles are not expected because PIGU juveniles are generally seen only on the water and not on islands or colonies. This category is retained for consistency with the counts of the other species and may be removed in subsequent years from data sheets if juveniles are totally absent in 2014.

Counts of the first-year age cohort of Pigeon Guillemots rely on the following features: (1) head mostly mottled brown, with a white throat; (2) lack of a large white wing patch – instead matt brown or stripes of black and white while at rest or visible in flight; and (3) under parts with barred brown pattern.

NOTE: Juveniles generally appear identical to Adults during their first winter. The duration of juvenile plumage is brief.

Count in this total any injured birds if present but do not count dead birds if present.

PIGU Adults

Counts of the adult cohort of Pigeon Guillemots rely on the following feature in the non-breeding season: white chest; face with dark stripe behind the eye; white wing patch is conspicuous; back barred or mottled with black.

Birds in breeding plumage are easier to discern because they have all black plumage apart from a prominent white wing patch with a black bar across the base of the greater coverts.

Count in this total any injured birds if present but do not count dead birds if present.

PIGU Unknown

Total the number of birds whose plumage is not clearly visible enough to classify as one of the previous three age cohorts or whose plumage appears to be outside the range of the classification. Discerning juvenile and adult birds may not be possible under some viewing conditions. Take notes about unusual or confusing plumages.

Count in this total any injured birds if present but do not count dead birds if present.

PIGU Injured

Total here all the injured Pigeon Guillemots noted during the current census. These birds are also counted in one of the previous four categories of plumage characterization.

PIGU Dead

Total here all the dead Pigeon Guillemots noted during the current census. These birds are not counted in one of the previous four categories of plumage characterization.

Make a note of the plumage under **PIGU Notes** if the plumage type of the dead bird is not discernible.

PIGU Notes

Make notes of significant information or observations in regard to Pigeon Guillemots counted here.

Other Species

Enter the counts of other bird species, or marine mammals, seen on the CCNM rocks and islands. Codes for several species normally found on the CCNM rocks and islands are pre-printed on the survey sheet. In this section live birds are tallied as the total individuals of the species, without regard to age class or health status.

The following species are non-breeding gull species that may be seen: BOGU, HEEG, RBGU, CAGU, GWGU, HEGU, and THGU. If a gull species cannot be identified, the code “UNGU” (Unknown Gull) is used. Refer to the Legend Code sheet for the full common names of these species. If you observe a bird species for which there is no Legend Code, record the four-letter USGS abbreviation code for that species, if known. Alternatively, enter the full common English name of the observed species.

Counts of marine mammals seen hauled out on the CCNM rock islands are entered in the fields related to seals and pups at the bottom of the survey sheet.

If a disturbance is observed, enter a “Y” in the **Disturbance** field; otherwise enter an “N”. If “Y” is entered describe the disturbance in the Notes area. Significant disturbances are also recorded on the Wildlife Disturbance Reporting Form.

Additional Notes and Observations

Field observers record data about behavior of the species of interest and any disturbances that are observed. The “Counts of Species Not Listed + Notes” field and the back of the field sheet are available to continue field notes as needed.

2.9.4 Disturbance Monitoring (Written by Sage Tezak)

Reporting Wildlife Disturbance Incidents

An online reporting form is available for trained volunteers to report wildlife disturbance incidents. The online form is used to quantify, describe and report wildlife disturbance incidents at seabird breeding and roosting sites, and at marine mammal haul-outs along the California coast, and on off-shore islands and rocks.

Not all incidents will result in prosecution. Some incidents may not warrant law enforcement involvement, however documentation of these incidents is important. The Seabird Protection Network and partnering agencies use the collected information for: 1) educational purposes, 2) tracking repeat offenders, and 3) illustrating the need for more enforcement.

What is a Wildlife Disturbance?

For the purposes of the Wildlife Disturbance Reporting Form, a wildlife disturbance is defined as any human-related harassment, flushing, displacement, harm and/or agitation of wildlife, which includes but is not limited to operating a vessel or aircraft or to do any other act that results in the disturbance or molestation of nesting or roosting seabirds or resting marine mammals.

Seabird Disturbance

A seabird disturbance is defined as any event that results in the following actions:

1. Birds flushing (birds flying off the rock) or displacing (moving from their nest, resting site or rafting area).
2. Any event, which causes eggs or chicks to be exposed (adult moves away from the egg or chick), displaced (egg or chick moves from nest site), or taken (egg/chick is depredated).
3. An event that causes birds to be visibly agitated or alerted, including “head-bobbing” in Common Murre (birds moving their heads up and down) and alert postures in cormorants (e.g., heads up and alert, wing-flapping).

It may not be necessary to complete the Wildlife Disturbance Reporting Form for an incident that results in only head-bobbing. Head-bobbing behavior in Common Murre indicates agitation and a certain level of disturbance. However, it is difficult and unnecessary to record every event in which head-bobbing occurs.

Marine Mammal Disturbance

A marine mammal disturbance can be defined as any event that results in the following actions:

1. Head-alert is defined as a pinniped raising its head from a resting position. The animal will turn its head in the direction of potential danger.
2. Flushing behavior constitutes the animal moving towards or into the water. The animal is flushed from the resting position.

Sea Turtles

The laws and regulations that prevent disturbance to marine mammals and birds may also include sea turtles. The form can be used to record sea turtle disturbance incidents as well.

2.9.5 Photography

Daytime Land Photography from Vantage Points

Experienced, trained volunteer photographers take photographs from each vantage point. These photographs serve as photo documentation of sites and furnish the basis for subsequent monitoring observations of nests visible from vantage points in a given year.

Aerial Photography

Stewards and partners will be conducting supplemental aerial photography flights of the study sites during the breeding season. Aerial photographs of the islands are important for monitoring seabird nests and nesting activity in locations not easily observed from mainland vantage points.

Photography Variables

Photo ID should include the date, time when each photograph was taken, camera make and model, lens used, settings and latitude, longitude, altitude and other GIS data when available. Photographers establish archives of their photographs and may provide archival CDs or DVDs to Stewards. The CD and DVDs contain the digital files of photographs selected by the Stewards and the photographers in consultation with BLM wildlife biologists.

Photographs submitted for the project are located and archived for Stewards and stored. Stewards supplies copies of selected photographs to the BLM and the USFWS upon agency request. Ownership and copyright of such photographs remain the property of the individual photographer. Initial agency requests for photographs are submitted to Stewards. Stewards, in turn, passes on such requests to the photographer. The individual photographer determines the sales price of the photograph(s).

Stewards also archives disturbance videos and sound recordings made by members of the Monitoring Group. Requests for videos and sound recordings are processed according to the same procedure established for photographs.

For the land-based, day photography, Stewards provides a Powershot SX40 digital camera. The camera is mounted on a stable tripod using a Wimberly Gimble-style tripod head or equivalent with the lens center at 1.5 m (54.5 inches) in height from the ground. In some instances, a weighted beanbag is placed over the camera and lens in an attempt to mitigate the jarring effect of high winds. Photography that meets Stewards quality standards may, at times, be impossible due to heavy fog and high winds. Wide-angle lenses are used periodically to take reference photographs of the sites in their entirety. It is important that all photographers use equivalent image systems.

TAKING PHOTOGRAPHS USING THE POWERSHOT SX40 CAMERA

First take a fairly wide-angle view of the site showing the condition of the entire rock and its surroundings. Then zoom in and take an overlapping series of photographs starting at the top left and working your way across and down until you have covered the entire rock. If anything especially interesting occurs try and photograph it separately as well. If conditions vastly change during your shift, repeat the first series at the end of the shift.

The best results are obtained by mounting the camera on a tripod, turning off the image stabilizer (IS) and turning on the self-timer (ST). A menu on the camera is set to do this for the photographer. It is not recommended to experiment with the menus as the auto setting can rarely be beaten and the menus are complicated. If the photographer is uncomfortable using the camera this way, simply hand hold it and take your photos in the auto mode.

BASIC HAND HELD METHOD

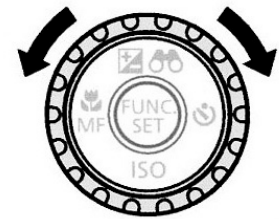
Check that the dial on top of the camera is set to AUTO – the green word AUTO should be lined up with the notch on the camera body to the left of the dial. Remove the lens cap and turn the camera on using the power button beside the dial.

Open the LCD screen on the back of the camera. There is a notch on the right side edge to make this easy. The screen can be folded back into the camera body with the viewing side out or it can be pulled out at an angle to best see desired image. It moves easily; so if there is resistance, do not force it. To look through the viewfinder instead, tap the DISPLAY button on the lower back of the camera to scroll through its menu until you see the picture move from the LCD screen to the viewfinder.

Compose the shot and press the SHUTTER BUTTON (the shiny metal button on top) lightly, halfway down. The camera will beep twice when it is in focus. Continue to press the shutter all the way down, keeping the camera still until after the shutter sound ends. The image just taken will appear on the LCD screen, regardless of whether the photo is taken using the LCD screen or the viewfinder. To ZOOM in, do so by moving the lever that surrounds the shutter button to the right to zoom in and the left to zoom out.

When all necessary shots are take, REVIEW photos one at a time by pressing the BLUE ARROW on the camera back – top right. Scroll through them by touching the left or right section of the dial on the back of the camera. When review is complete, touch the BLUE ARROW again to return the camera to picture taking mode.

WARNING There is a control dial on the back of the camera that has a button in the center labeled FUNC.SET and a ring around the dial that turns. They are both EXTREMELY SENSITIVE TO TOUCH, so please be careful. If inadvertently touched, where the symbols are located a menu will appear on top of the LCD screen. Please avoid the temptation to stab at buttons to get rid of it, just wait a few seconds and it will disappear on its own without changing any settings.



At the end of the monitoring session, turn the camera off. Wipe down the camera body with a soft cloth and gently clean the lens and LCD screen with the microfiber cloth in the camera bag. Do NOT use the microfiber cloth for anything else – it needs to stay dust and grit free so as not to damage the glass. Reattach the lens cap and return the camera to its bag.

TAKING PHOTOGRAPHS USING A TRIPOD

First review the basic method above. Set the dial on top of the camera to C1 instead of AUTO. This program has been set up automatically to turn off the IS and turns on the ST. Mount the camera on a tripod then turn it on. The scope tripod can be used prior to and after monitoring. Volunteers may bring and use their own photographic tripod, which will enable them to take photos throughout the entire session without temporarily removing the scope. Proceed as in the basic method. When the shutter button has been pressed down all the way remove finger from the button quickly. There will be a 2 second delay with camera beeps before the camera takes the photo to reduce shake. Before turning off the camera please make sure to return the top dial to the AUTO setting. Detach the camera from the tripod and clean as in auto mode.

IMPROVING YOUR PHOTOGRAPHS IN C1 (tripod) MODE

When reviewing photos they may appear too light or dark to see the photographed subject well. A white gull will show up better with a little less exposure and a black cormorant may be easier to identify with a little more exposure. It is possible to retake those photos after adjusting the exposure settings.

Using the dial on the back of the camera, press the top part with a +/- symbol to enter exposure compensation mode. A scale will appear on the LCD screen with a green light that should be at zero. Rotate the outer ring to the right or left side to adjust the brightness. Rotate the ring gently and touch only the areas between the symbols or the camera will adjust to another mode (review the **WARNING** section above). The green light will move to show changing exposure and the image will get lighter or darker. When the photographed object appears most clearly, press the +/-

symbol again to return to shooting mode and take the photo. When completed, please return the exposure to the 0 setting.

DELETING PHOTOGRAPHS

Please do not attempt to delete any of the photographs, regardless of their quality. There may be something of value that can only be seen when the files are uploaded into a computer. Out of focus or accidental photographs will be deleted later.

BATTERIES

The Coordinator will recharge camera batteries on a regular basis. A spare battery will remain in the camera case as well. If batteries do need to be changed, the battery door is on the bottom of the camera.

SECTION 3: QUALITY ASSURANCE AND DATA MANAGEMENT

3.1 Training

Quality Assurance for seabird monitoring ensures *in advance* that data resulting from this protocol attain the expected level of data quality. The expected level of data quality for this monitoring protocol is an accurate depiction with better than 90% confidence.

People are the most valuable resource of the monitoring program. BLM and Stewards work diligently to ensure that the quality of the data collected meets expected standards. Stewards is responsible for developing training materials, as well as scheduling and conducting training workshops before each type of monitoring begins.

Standards of Quality

- All identification of seabirds and by species and age category are correct in >90% of the data.
- All population counts are within 5% of the true population count.
- All photographic and optical equipment meet minimum standards as established by the Monitoring Group (refer to Section 2.5).

Field Supervision

The Coordinator and site trainers check on the performance of monitoring volunteers and validate that the field data collection meets the standards of quality. These checks are randomly conducted during the monitoring period by the assigned volunteers or BLM wildlife biologists. Stewards or BLM advisors accompany monitoring groups during initial sessions, and again during different periods throughout each season as changes occur (non-breeding to breeding, egg to chick stage, etc.).

Checks of this sort take place during training sessions as well so that volunteers know that there is internal quality control for data collection.

Seabird and Nest Surveys

Stewards will provide educational workshops covering seabird identification, field methods, form completion, and equipment use for the seabird and nest observation monitoring. The contribution of expertise from area residents is extremely important. Stewards schedules appropriate educational sessions with the volunteers. The training curriculum is determined and implemented in advance of the start of the monitoring period.

At least one training workshop is held before the beginning of each type of survey: Coastal Island, Breeding Season and Non-breeding Seasons. The workshop consists of PowerPoint presentations and field training. Forms and handouts are provided for familiarizing volunteers with protocol practices and procedures.

The workshop covers: purpose of survey, areas being surveyed, details of frequency and schedule, team members and responsibilities, materials and equipment to take to the field, forms used and details of how to complete them, elements of quality control and quality assurance, identification and natural history of species likely to be observed and safety measures. *A point is made to distinguish between nothing visible due to ambient conditions (e.g., fog) versus nothing observed and counted because of the absence of a species or age category of a particular species.* Field practice is done in small groups before the intensive monitoring to review materials covered during

the training workshops. After the initial practice monitoring is complete, all team members share feedback to clarify questions that may have arisen.

BLM wildlife biologists are available to assist with the training efforts.

Photographic Documentation

The volunteer experienced trained photographers take photographs and assist in making their copyrighted photographs available to Stewards and government agencies in a timely manner so that information from photographs can be gathered, summarized and interpreted in an efficient manner.

Photographers also conduct fee-based workshops that are made available to Stewards monitors interested in contributing their photo documentation skills to the monitoring effort. Photographic equipment used in monitoring must meet the minimum quality standards established by the Monitoring Group.

Sound Recordings

Stewards may rely on volunteer sound engineers and physicists for advice and equipment to accomplish results for documenting decibel levels from the fireworks display.

3.2 Data Management

Once volunteers collect data, the Coordinator, volunteer data managers, and Stewards manages and stores the data to guarantee data availability and integrity for future analysis. Stewards arranges for storing data in electronic form and conserving the original data sheets and electronic data in Stewards archives. Data review, its conversion to electronic form, data checking, quality control and storage procedures consist of the following steps:

1. Initial Data Sheet Review: each member of the monitoring team on site will review all other monitoring volunteers to check for quality identification and anomalies. Once all members of the monitoring team are in agreement, each member signs off on the submitted data sheet.
2. All field data sheets are scanned and then entered into MS EXCEL workbook from the data sheets.
3. Data Entry Review: At least two volunteer data managers review electronic data, highlight discrepancies between data entered electronically and data entered manually on data sheets and flag items needing further attention for clarification.
4. Correction of Data Transcription Errors: correct transcription errors in the MS EXCEL worksheet.
5. Resolution of Items Highlighted for Attention: resolve or correct items flagged for attention.
6. Annotation of All Changes to Data: record the details on each data sheet and in the MS EXCEL workbook of all changes to data during Data Sheet Review and Correction and Resolution of Data Transcription.
7. Data Backup and Storage: scan original data sheets to provide an electronic backup and back up all electronic files in MS EXCEL.

These steps are described in more detail in the following paragraphs.

Data Sheet Review

Before the volunteers leave the monitoring site, they review the sheets for legibility, completeness and accuracy and sign off on submitted data sheets. Volunteers leave their data sheets in a binder at the Jenner Visitor Center (JVC) where they pick up their equipment and forms. The Data Manager will pick up the forms at the JVC on a monthly basis.

Data Entry

The volunteer data managers enter the scanned data into the MS EXCEL spreadsheet, which is then reviewed by another volunteer and/or the Coordinator. The Data Manager enters the data or arranges for the entry of data from field data sheets into the respective electronic spreadsheets. Each type of field data sheet has its own spreadsheet inside the MS EXCEL workbook file. MS EXCEL allows eventual data transfer to a relational database for analysis. The data entry person dates and signs each data sheet page to indicate that he or she has entered the data into the appropriate MS EXCEL worksheet.

Each spreadsheet has columns for each variable on a field data sheet in the order that the variables appear on the field data sheet. This arrangement facilitates data entry. Additionally, notes or comments written by Stewards volunteers are transcribed verbatim into corresponding cells on the spreadsheet. Occasionally, notes from one field survey form actually may pertain to data on a different field survey form completed during the same shift. In such cases, the designated person for data entry enters the notes on the appropriate field data sheet and makes an additional annotation identifying the source field data sheet from which he or she has transcribed the notes.

Data Entry Review

If the data entry person or reviewer finds data to be unclear or questionable, she or he enters the data as closely as possible to the data as it appears on the survey data sheets and flags (highlights) the data in question by filling the MS EXCEL cell with a yellow background. The data entry person contacts the volunteer(s) who filled out the data sheet to clarify any issues. Clarifications and corrections are noted and initialed on both the data sheet and the EXCEL worksheet.

Correction of Data Transcription Errors

The Data Team functions as proofreaders to insure data integrity. All data checking begins by comparing the data entered in each worksheet cell to the corresponding handwritten data on the data sheet. This task confirms equivalency or corrects a transcription error. Any transcription errors are corrected on the worksheet by typing the correct data element in red typeface into the previously incorrect data cell. After proofreading, the data checker dates and signs each data sheet to verify that the data on the data sheet has been checked against the original data entry and returns the forms to the data manager. The data checker also enters the review date and his or her name into the appropriate worksheet for each data sheet to indicate that the review process has concluded. The data manager then reviews the red typeface changes and, after review, removes the yellow highlighting. If the data manager does not agree with the changes, the data is again reviewed by the data manager, the data checker, and the Coordinator for resolution.

Resolution of Items Highlighted for Attention

To resolve uncertainties, the data entry person or data checker contacts the monitoring team for clarification regarding items highlighted for attention by the data entry person. Subsequently, if a correction is required, the data entry person enters the correction or explanation on the data sheet and on the EXCEL worksheet, removes the yellow highlight, and adds an annotation to the cell noting the correction or clarification of the data so that the history of the resolution of the uncertainty about the data is permanently documented. If no resolution is possible, the data element is discarded and “<Null>” (i.e., “no data”) is entered.

Annotation of All Changes to Data

The data entry person always adds an annotation to a cell of each data element having a transcription correction or a correction for an item flagged for attention so that there is a history of the data correction(s) permanently documented as an integral part of the data set.

Data Backup and Storage

Stewards is the final repository for the original field data sheets as well as the electronic files and the final MS EXCEL workbook for any given year. Stewards also provides storage of an electronic archive on Google Drive. During the current monitoring year, the Data Manager provides periodic backup of all current materials (original data sheets, MS EXCEL workbook, etc.). The field data sheets are scanned and the scanned documents are deposited in an electronic archive in the event that the paper copies of the field data sheets begin to deteriorate with age. A copy of all electronic files is stored with another Stewards member at least quarterly.

For each year, a new MS EXCEL workbook is created to prevent accidental modification or loss of data from a previous year.

Stewards provides the BLM with an updated version of all data that Stewards has collected from islands that comprise the California Coastal National Monument during each yearly quarter. Stewards will be sharing data with the BLM, CA State Parks, and Seabird Protection Network.

SECTION 4: MONITORING CONTRIBUTIONS of STEWARDS

4.1 Volunteer Effort

Tracking the time and expenses of Stewards and its volunteers is important to determine the true cost of the annual monitoring conducted under the MOU between CCNM and Stewards as well as Seabird Protection Network and Stewards. Volunteers will fill out and turn in appropriate volunteer hour forms. CA State Park volunteers will complete forms from the CA State Parks. Stewards Volunteers will complete the online Stewards volunteer form.

Periodically, volunteers will be photographed during the various monitoring periods to document the volunteer effort.

Stewards' volunteers will submit stipend forms directly to the Stewards office, which will then be handled by the Stewards Administrative Director.

SECTION 5: OTHER TAXA: FLORA, LICHENS AND INVERTEBRATES

Surveys of the flora, lichens, and invertebrates present on the CCNM islands will be conducted in future years. The protocol for the vascular plants and other species is being developed. As people's expertise builds, inventories will come to include surveys of non-vascular plants (algae), lichens, and invertebrate taxa of tide pools.

SECTION 6: LITERATURE CITED

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APPENDIX A Bird Species Legend Codes

LEGEND CODES					
PRECIPITATION		ADULT BEHAVIOR			
Precip Code	Description	Behavior Code	Description		
0	No precipitation	0	Adult(s) not present at the site		
1	Mist or fog	S	Adult(s) standing next to or near nest		
2	Light drizzle	N	I	Adult(s) on nest	
3	Light rain		B	Adult(s) in incubating posture on nest	
4	Heavy rain	U	Adult(s) in brooding posture on nest		
U			Adult(s) in other posture – Describe in field notes		
WIND SPEED		NEST CONDITION			
Wind Code	Description	Nest Code	Description		
0	Smoke rises vertically	BT	Birds are present, have a territory, and are displaying.		
1	Wind direction shown by smoke drift	NM	Nest material is present in loose clumps or stringy bunches of marine or terrestrial vegetation forming at most a disorganized mat.		
2	Wind felt on face; leaves rustle	N	PN	Poorly-Built Nest: a disorganized mound or a flat pile of nesting material	
3	Leaves, twigs in constant motion; light flag extended		FN	Fairly-Built Nest: a well-defined, roughly circular pile of nesting material up to approximately 6" in height, with some evidence of a nest bowl depression at its center	
4	Raises dust and loose paper; small branches moved		WN	Well-Built Nest: substantial (>6" vertical height) amount of nesting material, forming a clearly-defined circular nest structure with a well-developed nest bowl, often plastered with much guano	
5	Small trees in sway	NV	Nesting birds are present but the actual nest site is not visible from the vantage point.		
6	Wind whistling, large branches moving	AB	Abandoned nest from the current year - Abandoned nests are nests that do not have adults in attendance for two or more consecutive days during the monitoring period.		
USGS Species Code		LARGEST CHICK SIZE			
AOU SPECIES	Common Name	Chick Size Class	Description		
BLOY	Black Oystercatcher	C	C1	Tiny Naked Chick (1-8 days old): completely helpless, struggling to raise head for short periods	
BLTU	Black Turnstone		C2	Small Downy Chick (8-15 days old): completely downy, able to sit up to feed, but no other mobility	
BRAC	Brandt's Cormorant		C3	Large Downy Chick (15-25 days old): mostly to entirely downy, with sheathes of flight feather often visible in older chicks, able to stand up, move about in nest, beg aggressively, and even wander out of nest; and beginning to crèche	
BRBL	Brewer's Blackbird		C4	Gawky Chick (25-40 days old): most flight feathers well established and body contour feathers largely replacing downy fluff; head and neck remain mostly downy; very mobile, crècheing heavily	
BRNS	Barn Swallow	J	Juvenile (40+ days old): flight and contour feathers >95% established, very mobile and completely independent of nest site; possibly capable of flight		
BRPE	Brown Pelican				
CAGU	California Gull				
CLSW	Cliff Swallow				
COMU	Common Murre				
CORA	Common Raven				
DCCO	Double-crested Cormorant				
EUST	European Starling				
GWGU	Glaucous-winged Gull				
HEEG	Heerman's Gull				
HEGU	Herring Gull				
MEGU	Mew Gull				
PECO	Pelagic Cormorant				
PERE	Peregrine Falcon				
PIGU	Pigeon Guillemot				
RBGU	Ring-billed Gull				
RUTU	Ruddy Turnstone				
USGS SP. Code	AOU SPECIES	COMMON	Mammal Species Code	Common Name	
SURF	Surfbird				
UNGU	Unknown Gull Species		ES	Elephant Seal	
WATA	Wandering Tattler		HS	Harbor Seal	
WEGU	Western Gull		CSL	California Sea Lion	
WHIM	Whimbrel		SSL	Stellar Sea Lion	
WILL	Willet		NFS	Northern Fur Seal	

NOTE: Enter an X in any Data field when No Data are collected.

APPENDIX B Breeding Season Seabird Survey Sheet

BREEDING SEABIRD SURVEY									
PG OF 									
AMBIENT VARIABLES									
Colony		Point #		Date yyymmdd	2013- - - -	Data Recorder			
Start Time		Cloud %		Precip		Other Observer(s)			
End Time		Wind		Temp °C					
CORE INDICATOR SPECIES									
Enter # of Birds Counted. Valid Codes are: # (count) 0 (no birds present) X (no data)									
BRAC	Downy Chick	Full Size Chick	Dull Brown Juvenile	Adult	Unknown	BRAC Injured	BRAC Dead	BRAC Notes	
DCCO	Downy Chick	Full Size Chick	White Throat and Belly	Adult	Unknown	DCCO Injured	DCCO Dead	DCCO Notes	
PECO	Downy Chick	Full Size Chick	Dull Brown Juvenile	Adult	Unknown	PECO Injured	PECO Dead	PECO Notes	
BRPE	Brown Head/ White Belly	White Heads/ Light Belly		White Head/ Dk Brown Belly	Unknown	BRPE Injured	BRPE Dead	BRPE Notes	
BLOY	Downy Chick	Juv Feathers Dark Bill Tip		Adult	Unknown	BLOY Injured	BLOY Dead	BLOY Notes	
WEGU	Tiny Chick in Nest	Chick Not Full Grown	Juvenile All Brown	Grayish Back Brownish Head	Gray Back White Head	WEGU Injured	WEGU Dead	WEGU Notes	
COMU	Chick		Nonbreeding Adults	Breeding Adult	Unknown	COMU Injured	COMU Dead	COMU Notes	
PIGU	Chick		Nonbreeding Adults	Breeding Adult	Unknown	PIGU Injured	PIGU Dead	COMU Notes	
OTHER SPECIES	CANG	SURF	BLTU	HEEG				Counts of Species Not Listed + Notes	
	Harbor Seal Adult + Imm.	Harbor Seal Pups Total	Dead Pups	red seals	Seals w/ Shark Bites	Disturbance			
						Y / N		Additional Space for Notes on Reverse	

APPENDIX C Non Breeding Seabird Survey Form

NON-BREEDING SEABIRD SURVEY										PG OF
AMBIENT VARIABLES										
Colony	<input type="text"/>	Point #	<input type="text"/>	Date	2013-__-__	Date	<input type="text"/>	Recorder	<input type="text"/>	Other Observers(s) }
Start Time	<input type="text"/>	Cloud %	<input type="text"/>	Precip	<input type="text"/>					
End Time	<input type="text"/>	Wind	<input type="text"/>	Temp	<input type="text"/>	°C				
CORE INDICATOR SPECIES										
Enter # of Birds Counted. Valid Codes are: # (count) 0 (no birds present) X (no data)										
BRPE	Brown Head/ White Belly	White Heads/ Light Belly	White Head/ Dk Brown Belly	Unknown Plumage	BRPE Injured	BRPE Dead	BRPE Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
BRAC		Juveniles	Adults	Unknown Plumage	BRAC Injured	BRAC Dead	BRAC Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
PECO		Juveniles	Adults	Unknown	PECO Injured	PECO Dead	PECO Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
BLOY		Juveniles	Adults	Unknown Plumage	BLOY Injured	BLOY Dead	BLOY Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
WEGU	Brown Full-Grown	Grayish Back Brownish Head	Gray Back White Head	Unknown Plumage	WEGU Injured	WEGU Dead	WEGU Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
COMU	White Throats, White Bellies	Juveniles, most like out at sea		Unknown Plumage	COMU Injured	COMU Dead	COMU Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>			
OTHER SPECIES	BLTU	CAGU	CANG	CORA	DCCO	HEEG	Counts of Species Not Listed + Notes			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>				
	PERE	PIGU	RBGU	SURF	UNGU	WATA	Additional Space for Notes on Reverse			
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>				
	Harbor Seal Adult + Imm.	Harbor Seal Pups Total	Dead Pups	?	Seals w/ Shark Bites	Disturbance	Additional Space for Notes on Reverse			
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>					
					Y / N					
SPECIES	NOTES and OTHER OBSERVATIONS									
<input type="text"/>	<input type="text"/>									

APPENDIX D Coastal Island Survey Form

COASTAL ISLAND SURVEY										PG	OF	
Date yyyyymmdd 2010		Data Recorder			Other Observer(s)							
Start Time military		Cloud %		Precip								
End Time military		Wind		Temp °C								
Island Arrival Time	Island or Archipelago	Roosting Birds		Nesting Birds		Pinnipeds		Item	Y	N	X	Location: Description and/or UTM coordinates for place <i>from which Observation</i> is made. Terr. Plants: Terrestrial plants only, list in box below. Other Taxa: Non-vascular plants or other life on islands
		Species 0 X	# X	Species 0 X	# X	Species 0 X	# X					
								Location:				
								Terr. Plants:				<input type="checkbox"/> sea palm <input type="checkbox"/> mussels <input type="checkbox"/> sea star <input type="checkbox"/> sea lettuce <input type="checkbox"/> eel grass <input type="checkbox"/> kelp
								Other Taxa:				<input type="checkbox"/> barnacles <input type="checkbox"/> nail brush <input type="checkbox"/> unknown <input type="checkbox"/> other:
								Location:				
								Terr. Plants:				<input type="checkbox"/> sea palm <input type="checkbox"/> mussels <input type="checkbox"/> sea star <input type="checkbox"/> sea lettuce <input type="checkbox"/> eel grass <input type="checkbox"/> kelp
								Other Taxa:				<input type="checkbox"/> barnacles <input type="checkbox"/> nail brush <input type="checkbox"/> unknown <input type="checkbox"/> other:
								Location:				
								Terr. Plants:				<input type="checkbox"/> sea palm <input type="checkbox"/> mussels <input type="checkbox"/> sea star <input type="checkbox"/> sea lettuce <input type="checkbox"/> eel grass <input type="checkbox"/> kelp
								Other Taxa:				<input type="checkbox"/> barnacles <input type="checkbox"/> nail brush <input type="checkbox"/> unknown <input type="checkbox"/> other:
								Location:				
								Terr. Plants:				<input type="checkbox"/> sea palm <input type="checkbox"/> mussels <input type="checkbox"/> sea star <input type="checkbox"/> sea lettuce <input type="checkbox"/> eel grass <input type="checkbox"/> kelp
								Other Taxa:				<input type="checkbox"/> barnacles <input type="checkbox"/> nail brush <input type="checkbox"/> unknown <input type="checkbox"/> other:
Island Number	Notes and Additional Observations											

CODES: Species (See Legend Code - Use 4-Letter Abbreviation) 0 (Zero = No Species Present) # (Count) Y (Yes) N (No) X (No Data)

APPENDIX E Gull Rock Supplemental Data Sheet

Gull Rock (breeding season supplemental sheet)

Point # _____ Date YYYYMMDD _____ Data Recorder _____
 Start Time _____ Wind Speed (mph) _____ Other Observers _____
 End Time _____ Precip code _____
 % Cloud Cover _____ Temp C _____

Common Murre numbers

adults/chicks

1. South Slope _____ / _____
 2. South Plateau _____ / _____
 3. South Face _____ / _____
 4. Top South _____ / _____
 5. Top North _____ / _____
 6. Middle Face _____ / _____
 7. The Cave _____ / _____
 8. North Face _____ / _____
 9. Upper Crevice _____ / _____
 10. Lower Crevice _____ / _____
 11. North Bump _____ / _____
 12. North Shelf _____ / _____
 13. North Cliff _____ / _____
 TOTAL _____ / _____

Brandt's Cormorant numbers

adults/ chicks /nests

1. South Slope _____ / _____ / _____
 2. South Plateau _____ / _____ / _____
 3. South Face _____ / _____ / _____
 4. Top South _____ / _____ / _____
 5. Top North _____ / _____ / _____
 6. Middle Face _____ / _____ / _____
 7. The Cave _____ / _____ / _____
 8. North Face _____ / _____ / _____
 9. Upper Crevice _____ / _____ / _____
 10. Lower Crevice _____ / _____ / _____
 11. North Bump _____ / _____ / _____
 12. North Shelf _____ / _____ / _____
 13. North Cliff _____ / _____ / _____
 TOTAL _____ / _____ / _____

